NORTH AUBURN
MASTER LAND USE PLAN
Auburn University

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Prepared by
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Table of Contents

1.0 Introduction
   1.1 Goals of the Study
   1.2 Assumptions of the Study
   1.3 Purpose of the Study

2.0 Planning Background and Context
   2.1 History of North Auburn
   2.2 Context
   2.3 Soil Conditions
   2.4 Utilities and Infrastructure

3.0 Existing Land Uses and Research Activities
   3.1 College of Agriculture
      3.1.1 Department of Fisheries and Allied Aquacultures
   3.2 College of Veterinary Medicine
   3.3 School of Forestry and Wildlife Sciences
      3.3.1 School of Forestry and Wildlife Sciences Land
      3.3.2 Forestry Activities on Animal Health Research Land
      3.3.3 Forestry Activities on Fisheries Research Unit Land
   3.4 Changes to Land Uses

4.0 Programmatic Requirements for the Poultry Research Farm and Acid Deposition Facility
   4.1 Poultry Research Farm
      4.1.1 Site Selection Criteria
      4.1.2 Proposed Poultry Facilities
      4.1.3 Goals for Relocation
      4.1.4 Waste Disposal
      4.1.5 Adjacencies/Compatibility Issues
   4.2 Programmatic Requirements for the Acid Deposition Facility

5.0 Poultry Research Farm Site Selection Analysis
   5.1 Poultry Research Farm Site Selection Methodology
      5.1.1 Existing Conditions Analysis
      5.1.2 Development Parameter Analysis
   5.2 Proposed Site for the Acid Deposition Research Facility

6.0 Future Considerations for the North Auburn Property
   6.1 North Auburn Management Structure and Issues
   6.2 Future Land Acquisition Strategy – Figure 14

Acknowledgements
References
Appendix
List of Figures

Existing Conditions Figures
Figure 1: North Auburn Existing Uses
Figure 2: Elevation
Figure 3: Slope Analysis
Figure 4: Forest Cover
Figure 5: Hydrology and Drainage
Figure 6: Waterlines and Hydrants
Figure 7: Sewerlines and Manholes

Development Parameter Figures
Figure 8: Development Buffers
Figure 9: Land Outside Development Buffer
Figure 10: Wet Area Buffers
Figure 11: Land Outside Wet Area and Development Buffer Zones

Potential Site Figures
Figure 12: Physiographically Suitable Sites for Poultry Unit and Acid Deposition Facility
Figure 13: Proposed Poultry Facility Site
Figure 14: Potential Acquisition Sites
1.0 INTRODUCTION

In October 2004, Sasaki Associates, Inc. was retained to prepare a Land Use Plan for North Auburn. The property is located approximately 4 miles north of the main campus. It encompasses approximately 3,300 acres of land and is one of several sites managed by the Alabama Agricultural Experiment Station (AAES), a research arm of Auburn University that includes its principle participants, the College of Agriculture, the School of Forestry and Wildlife Sciences, the College of Human Sciences, the College of Veterinary Medicine, and the College of Sciences and Mathematics.

This study examines the current land uses and land planning issues for North Auburn and recommends sites for the Poultry Research Farm and Acid Deposition Research facilities, both of which will be displaced by the construction of the Auburn University Research Park on the main campus.

1.1 Goal of the study

The goal is to provide a land use plan that will accommodate the relocated Poultry Research Farm and Acid Deposition Research facilities while protecting the land and water resources of the unit and enabling existing research activities to continue. The key planning issue at North Auburn is the protection of the watershed that supports the entire Fisheries Research infrastructure.

1.2 Assumptions of the study

The study is based on the following assumptions:

- The Poultry Research Farm and Acid Deposition facilities will be relocated to North Auburn. It is anticipated that the North Auburn property will eventually be surrounded by suburban residential development. Planning of the site, therefore, will need to take into consideration the conflicts and nuisance claims that may arise as the residential population increases.

1.3 Purpose of the study

The purpose of the study is to:

- Coordinate and document information on the existing land uses and conditions of the entire North Auburn property
- Document synergies and adjacency issues among the various users of North Auburn
- Set out recommendations for future land use, land acquisition, administration and management of the North Auburn property
- Identify potential sites for the Poultry Research Farm and the Acid Deposition Facilities
- Provide recommendations for the relocation of the Poultry Research Farm and Acid Deposition Facilities
- Document adjacency and displacement issues that may arise as a result of proposed land use changes.
2.0 PLANNING BACKGROUND AND CONTEXT

The planning background and context discussion in this section is supported by a series of Figures provided at the end of the document.

2.1 History of North Auburn

The North Auburn property consists of approximately 3,300 acres of land assembled over a fifty-year period. Portions of the land holdings were developed during the 1940s including the Fisheries Research Unit. Auburn University made considerable purchases of land to protect water quality within the two watersheds on the site: the Sougahatchee (southern) and the Loblockee (north). (Figure 1)

Previous land uses have included the Beef Cattle Field Station and the Dairy Research Unit. Much of the North Auburn property was abandoned following the relocation of the Dairy and Beef Cattle Research facilities to the E.V. Smith Research Center in 1977. Significant areas were clear-cut to finance the move of the Beef and Dairy Cattle research facilities. As a result, the site became overrun with invasive plant materials including multi-flora rose, kudzu, brush and briars.

In 1979, land within the North Auburn property was reallocated to support the Fisheries Research Unit and other programs affiliated with AAES. Land was reallocated as follows: Fisheries, 1,550 acres; Animal Science, 900 acres; and, Forestry, 700 acres. In 1980, 20 acres were assigned to the Wildlife Program. Since that time, recovery and regeneration efforts have been underway to transform the sites for other uses. Major users of the property have included the College of Veterinary Medicine, which has maintained approximately 700 acres since the late 1970s.

It should be noted that the North Auburn land has been assigned to the Departments of the School of Agriculture, Forestry and Biological Sciences prior to 1985. The School of Forestry (now Forestry and Wildlife Sciences) was created in 1984. Since 1985, reallocation of land has been made by the Dean of Agriculture/Director of the Agricultural Experiment Station.

2.2 Context

In recent years, land in the context surrounding the North Auburn property has been subdivided for residential uses, a trend that is anticipated to continue. The “leap-annexing” which has occurred exacerbates this trend.

To date, development of new housing has primarily occurred to the south and west of the property in subdivisions such as Camden Ridge and Ashten Park. It is assumed that the North Auburn Unit will eventually be surrounded by residential and other development. (Figure 1)
2.3 Soil Conditions
The North Auburn property is located in the Opelika Plateau Region of the Piedmont Province. The primary soils are Pacolet and Gwinnett sandy loams, both of which are highly erosive with a sandy loam topsoil over clay or sandy clay subsoil. In the 1920s most of the area was cleared and devoted to the production of cotton. Severe erosion washed away much of the topsoil. In many areas what remains is heavy clay. Outcrops of granite and friable sprolitic parent material are common.

2.4 Utilities and Infrastructure
Two power companies serve the North Auburn site: Alabama Power Company and the Tallapoosa River Electric Cooperative, which primarily serves the area north of County Road 72.

At present, water and sewer systems are limited in the context. Water services are provided as follows:

- Along US Highway 280 (8" to 10" line) (Lochapoka)
- Along Lee County Road 72
- Along Alabama Highway 147 to Lee County Road 72

Sewer services have been extended by the City of Auburn to serve subdivision development to the south of the North Auburn property including Camden Ridge and Asheton Park. The City of Auburn has no immediate plans to extend sewer services in the area. It should be noted that the extension of future services to the site might result in a more rapid development of the surrounding context.

Probable road expansion projects include the widening of Lee County Road 46 and Lee County Road 72 to four lanes.

3.0 EXISTING LAND USES AND RESEARCH ACTIVITIES
The North Auburn property accommodates the teaching and research activities of several colleges and departments. The land area assigned to each is summarized in Table 1:

<table>
<thead>
<tr>
<th>College / School / Department</th>
<th>Acres</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Fisheries and Allied Aquaculture</td>
<td>1,550</td>
<td>46.8%</td>
</tr>
<tr>
<td>Department of Animal Sciences</td>
<td>210</td>
<td>6.3%</td>
</tr>
<tr>
<td>College of Veterinary Medicine (Animal Health Research)</td>
<td>700</td>
<td>21.1%</td>
</tr>
<tr>
<td>School of Forestry and Wildlife Sciences (utilized by the Department of Biosystems Engineering)</td>
<td>850</td>
<td>25.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,310</strong></td>
<td></td>
</tr>
</tbody>
</table>

These uses and their location on the site are documented in Figure 1. The Existing Land Use Map identifies land by its first or primary use. It should be noted that many areas are used or managed collaboratively by more than one college or department. For example, the School of Forestry and
Wildlife Sciences manages wooded areas throughout the North Auburn property in areas assigned to Fisheries and the College of Veterinary Medicine.

3.1 The College of Agriculture

The College of Agriculture’s Department of Animal Sciences uses the land north of US Highway 280 for free range rotation of angus cattle and swine. Surrounding land uses include a Department of Transportation Facility to the east and the Forestry Pro-Training Center to the north. There is no concentrated animal waste disposal on the site. The Department of Animal Sciences has also been allocated land south of US Highway 280. This 52-acre low-lying area is currently maintained in hardwood tree cover planted in the early 1980s.

3.1.1 Department of Fisheries and Allied Aquacultures

The Department of Fisheries and Allied Aquacultures (Fisheries) occupies approximately 1,550 acres or approximately 47 percent of the land at North Auburn. The unique aquaculture and other pond systems have been developed over the last half-century and would be difficult to duplicate. Today, the Unit includes 235 earthen ponds, many of which are connected through gravity-flow piping systems.

The Fisheries Research Unit began with the construction of a number of research ponds along the Sougahatchee Creek in the mid 1940s. In the 1960s the number of research ponds was expanded and additional ponds were constructed to provide sufficient water storage. Additional land in the watershed was purchased over the years for storage ponds and to protect water quality. Currently, there are approximately 180 acres in ponds within the Research Unit.

Fisheries is equally concerned about water quality and quantity. A little over half of the land at North Auburn is outside the control of the Fisheries group but within the watersheds. It is important that these areas be managed to minimize the impact on water quality and quantity. Water quantity is a function of run-off as no wells have been tapped to serve the site.

Protection of the watersheds is a key issue given the importance of water quality to the research carried out. There are two watersheds of concern: the Loblockee and Sougahatchee Watershed. Fisheries utilizes ponds in both watersheds. The hydrology of the site has been altered over the years with underground piping, which in some cases allows water to flow from one watershed to the other.

To protect water quality and enhance the aesthetics of the station, Fisheries has a policy of managing the woodland. This includes planting open area and abandoned borrow pits, controlling kudzu and the harvest and regeneration of timber. The Fish Pond Reservoir and associated wetlands are managed to protect the headwaters of the watersheds.

Several facilities dedicated to the genetic improvement of fishes are located on the North Auburn Upper Fisheries Research Unit, which includes 70 earthen ponds. These ponds comprise the only government approved outdoor confinement installation for the study of transgenic fish in the United States. A hatchery contains aquaria, fiberglass tanks and incubators for artificially reproducing a variety of fish species. A facility for the study of biochemical genetics contains equipment for the
classification of fish strains by protein electrophoresis and DNA analysis, and the cloning of recombinant genes for introduction into fish eggs.

Existing facilities in the Research Unit include service buildings, equipment storage, shops, feed and fertilizer storage and a fish holding/handling facility. The Ireland Center for the study of fishery sciences, a fish processing / technology laboratory, a laboratory for research on biochemical genetics, a fish retail sales building a fish nutrition laboratory and hatchery laboratory also are located at the Research Unit. Most of the ponds are utilized for various research projects and several of the ponds are managed as a commercial fish farm for training students in a farm management curriculum.

### 3.2 College of Veterinary Medicine

The College of Veterinary Medicine (CVM) occupies approximately 700 acres of land on the North Auburn property as indicated on Figure 1. The land assigned to CVM is primarily utilized by the Department of Animal Health Research and is essential to maintaining an AAALAC (Association for the Assessment and Accreditation of Laboratory Animal Care) accredited working environment.

North Auburn is also important to research underway in the Department of Animal Health Research (the Department) and to the recruitment and activities of several faculty. Its proximity to the main campus and the CVM is an important factor.

The CVM land is utilized for infectious disease research, which requires isolated areas, including land for a pathogen free herd. Over the past 8 years, the Department has recruited five (5) new food animal faculty with a strong interest in research activities made possible by the North Auburn facilities—facilities not available at many competing institutions. Since 1996, the newer faculty appointments have been responsible for over $15 million in extramural contracts and grants for research and instruction from multiple sources including the Centers for Disease Control, National Institute of Health, United States Department of Agriculture, National Association of Animal Breeders and ten private corporations.

Utilization of the North Auburn property has enabled the Department to operate effectively in the face of dwindling state funding and competition for research funding. While contracts and grants currently cover the majority of the expense for research and teaching functions in the Department, these activities have been subsidized significantly by: 1) The availability of reasonably-priced, specific-pathogen-free cattle that are produced in the core breeding herd and are essential for much of the research; 2) Revenue from sales of a limited quantity of surplus hay; 4) Sales (surplus and post use) of cattle from the production herd; 5) Revenues collected from cattlemen who are served by the clinical research of the Advanced Reproductive Technologies Group.

Current research activities include the following as indicated on Figure 1:

- The BVD unit (Bovine Viral Diarrhea)
- The Beef Unit, which extends south of CR 090 and encompasses all of the CVM land between US 280 and CR 046. The central cow-handling facility is north of CR 090 near US 280 and
is used for all of the Beef Unit cattle. (There is a new cow-handling facility south of CR 090, but it does not serve all of the functions of the central facility; animals are still moved across CR 090.)

- The CDC unit includes research underway for the Department of Homeland Security. The research is contracted for 2003–2006 and potentially beyond. This research requires a high degree of security and includes an electrified fence along the perimeter.

- Hay production - Veterinary Medicine produces hay on many of the pastures. The expansion of research activities in recent years has resulted in less land being available for hay production. As a result, CVM will need to purchase hay in the future.

It is understood that as construction continues to take land around the College of Veterinary Medicine on the main campus, the need for the North Auburn property to support research is expected to increase. The Department has intensified improvements in the North Auburn facilities over the past 18 months. These improvements and expansion of animal handling capacity are necessary to accommodate new research initiatives and maintain AAALAC accreditation.

### 3.3 School of Forestry and Wildlife Sciences

The School of Forestry and Wildlife Sciences (Forestry) primarily utilizes the North Auburn land for teaching and limited research. The land allocated to Forestry tends to be unsuitable for Agricultural uses. The total amount of land allocated to Forestry is in the range of 850 acres and includes a 125-acre Forest Ecology Preserve which was donated to the University with the stipulation that it remain as a preserve in perpetuity.

In addition to its own land holdings within the North Auburn property, Forestry also manages and carries out research on wooded areas of land allocated to the Departments of Animal Health Research, and Fisheries.

The wooded areas of the North Auburn property which Forestry operates and manages is well documented in The Research Operations and Animal Health Department – Management Plan 2005–2010, the site management strategy set-out by the School of Forestry and Wildlife Sciences. A summary of the School’s activities is provided in this section.

#### 3.3.1 School of Forestry and Wildlife Sciences Land

Forestry land includes two areas referred to as compartments by the School:

- Compartments I, located north of US 280 contains 280 acres. It is hilly and as recently as 1979 was largely wooded except for areas, which had been cleared to establish pasture and then abandoned.

- Compartments II, located south of US 280 contains 420 acres. It is characterized by gently rolling land. In 1979, it consisted of abandoned pasture with only the drainage areas and highly eroded soils in woodland.
Compartment I

Compartment I contains 90 acres of pine plantation planted in 1980 on land that had been cleared. Active research is carried out in Compartment I on a 200-acre parcel north of US Highway 280 in conjunction with the Caterpillar Forest Pro-Training Center Agreement. Under this agreement, students test equipment donated by the Caterpillar Corporation. Management of Compartment I focuses on testing of the Forest Pro-Center equipment and cutting as appropriate. The Forest Pro site is also utilized by the Department of Biosystems Engineering.

Compartment II

Compartment II consists of 420 acres north of Lee County Route 72. Pine plantations were established in the fields vacated by the Beef and Dairy Units following a campaign to control the infestation of kudzu and rose. Additional stands of pine were established through research plantings between 1980 and 1998. Compartment II also contains areas of poor quality hardwood.

The School carries out a variety of research on its lands including progeny tests and clone banks established in the 1980s. Only 10 acres are maintained in open pasture. Recent studies include testing of harvesting equipment and a study of nutrient cycling on bottomland soils. Stands of young pine and limited hardwood stands have matured and are useful for field exercises in dendrology, silviculture, mensuration, and harvesting. The unit has also been used for prescribed burning.

Currently, there are approximately 300 acres of fair quality loblolly pine stands ranging in age from two to eighteen years of age and representing classes up to saw timber. Some regeneration of hardwoods has occurred but most of the hardwood and pine hardwood stands are in poor shape. Of the total Forestry acreage, 134 acres are classified as marginal or non-commercial. Of the remaining 566 acres, 18 acres are maintained in open field, 47 acres in small trees, 54 acres by small poles, 183 acres by large poles, and 264 acres by sawtimber.

Management of the land is aimed at maintaining productivity in regenerated pine areas and rehabilitating poor quality stands. Providing for research and maintenance of current research plots is the top priority.

3.3.2 Forestry Activities on Animal Health Research Land

Much of the land assigned to Animal Health and Research is maintained as pasture. The portions not supporting the research cattle herd are used for research plots for various departments, especially in forestry. This includes plantings for nursery studies and plots used for the screening of herbicides and growth regulators.

Most of the woodland is located along drainage ways to protect water quality and prevent erosion, along fencerows, in small patches used to provide pasture shade or on land difficult to maintain in pasture.

There are a few stands of interest in the Animal Health Research operations areas including 35 acres just south of US Route 280 planted in 1990 and 1991 (stands 208 and 209). Most of this
area was planted to loblolly pine and used to screen several herbicides for herbaceous weed control. The wet portions were planted with a number of hardwood species not generally seen as plantations including white ash, sweet gum, yellow poplar, sycamore, bald cypress, dawn redwood and princess tree. The research is now complete but the area continues to be used for silviculture, dendrology and plant physiology classes.

The remainder of the commercially operable timber consists of a few stands of pine which developed naturally or that were planted in areas no longer utilized for pasture. The marginal and non-commercial timberland consists primarily of sweetgum and water oak located in gullies, along creeks or along fencerows. There are also areas of pine hardwood in rocky areas utilized for pasture shade.

The management of wooded areas within the Animal Health Research land will need to be consistent with the objectives of the research activities. In general, forest management in this area is aimed at maintaining productivity in the young pine stands and protecting areas of interest to research and teaching.

### 3.3.3 Forestry Activities on Fisheries Research Unit Land

Within the Fisheries Research Unit most stands are small; however, 750 acres are classified as commercial and represent a valuable financial and research resource.

Wooded areas within the Fisheries Research Unit, after several years of steady improvement, includes 400 acres of fair quality loblolly pine stands ranging in age from seven to twenty-five years and representing size classes up to saw timber. Improvement has focused on the quality of the timber. Clear cuts have been aimed at harvesting poor quality stands and replanting. Of the 952 acres of forest located in the Fisheries area, 199 acres are classified as non-commercial or marginal. Of the remaining 753 acres, 30 acres are occupied by small trees (4%), 257 acres are occupied by small poles (34%), 156 acres by large poles (21%), and 309 acres by saw timber (41%).

The wooded areas around the ponds have been used for the time-motion study of harvesting equipment, evaluation of thinning techniques, demonstration of new harvesting technology, several ecological studies in pine plantations and studies in entomology and forest pathology. The Fisheries area has also been used occasionally for prescribed burning.

Forest management in the Fisheries Research Unit focuses on providing buffer areas adjacent to streams and ponds. Harvesting operations, site preparation and other silvicultural treatments are closely coordinated so that sediment or chemicals from runoff do not affect the fisheries operations.

Forest management is also aimed at maintaining productivity in the young pine stands and continuing the process of harvesting and regenerating the poor quality stands which remain. Harvesting and regeneration is aimed at maintaining a diversity of size classes. The Fisheries Research Unit has covered the costs associated with forest management.
3.4 Changes to Land Uses
It should be noted that several land uses have or will be changed in the near future:

- The shooting range has been decommissioned
- Bio-solids disposal on the site has been discontinued
- The deer pen is being relocated to the AAES Piedmont Sub-station.

4.0 PROGRAMMATIC REQUIREMENTS FOR THE POULTRY RESEARCH FARM AND 
ACID DEPOSITION FACILITY
As noted in the introduction, one of the goals of this study is to locate sites for the Poultry Research 
Farm and Acid Deposition facility that will be displaced by the construction of the proposed 
Auburn University Research Park on the main campus. This section summarizes the programmatic 
requirements for the relocation of the Poultry Unit and the Acid Deposition facility to North Auburn.

4.1 Poultry Research Farm
The criteria for relocating the Poultry Research Unit are set out in the Poultry Science Research and 
Education Unit Program Document dated December 16, 2004 and prepared by the Sizemore 
Group of Atlanta.

4.1.1 Site Selection Criteria
The criteria for the site selection as set out in the programming document include:

- 34 acres of land (excludes buffers, waste disposal or future expansion)
- Slope not to exceed that of the existing site (4-6%) (based on conditions at the existing Poultry 
  Research Farm)
- Remote location away from development and maintain setbacks
- Soil suitable for building
- Major utility connections (water, sewer, gas – propane is acceptable)
- Adequate area to accommodate all buildings, site features and necessary setbacks
- No brownfield sites (the soils will need to be tested for pesticide residues. The USDA Natural 
  Resources and Conservation Service at Auburn should be consulted on this matter).
- Suitable for waste management without creating undue burden on itself or adjacent properties 
  (lagoon system or other)
- Parking for 50 cars
- Accessible by roadways that can accommodate heavy trucks
- Suitable for meeting Americans with Disabilities Act requirements 
  (Sizemore p5.3)

The program document also notes that the Poultry Unit should be designed to minimize road 
frontage and be shielded from major roads. It will contain several Biosafety Levels (BSL). The 
higher the BSL, the further the building will need to be located from the main entrance. It will be 
surrounded by a six-foot high chain link fence topped with barbed wire. If provided, a lagoon 
waste treatment area will need to be fenced separately within the production area with a minimum
of four-foot chain link fence. Netting should be considered to prevent birds from flying into the lagoon areas.

Water, gas and electrical service are expected to be provided at the road frontage right-of-way.

4.1.2 Proposed Poultry Facilities
The required poultry facilities fall into four categories: 1) poultry housing (70,145 GSF); 2) research spaces (29,564 GSF); 3) support spaces (15,597 GSF) and 4) administrative spaces (5,071 GSF). A total of 120,377 GSF of space is proposed.

Poultry Houses Requirements
- 7 floor pen houses
- 2 cage layer houses
- 1 battery house and
- 1 specific pathogen free (SPF) house

The Research Spaces include: a meat processing plant; egg processing plant; and a hatchery.

The Support Spaces include a feed mill; shaving storage / bin; shop/storage; dry stack storage.

The Administrative Spaces include an administration building and farm manager’s house.

4.1.3 Goals for Relocation
Several goals are set out for the relocation of the facility

Functional Goals
- To enhance the facilities needed for research and support instruction and extension.
- To accommodate anticipated five-year staffing growth: 13 agricultural technicians, 30 graduate students, 25 faculty, and 75 undergraduate students.
- To increase the number of experiments while decreasing the number of birds in each experiment.
- To add value by enhancing quality, wholesomeness and safety or further processed meat and egg products
- To house the functions that support the farm to fork initiatives
  - This information was provided by Sizemore Floyd.

Form Goals
- To relocate and improve the existing facilities
- To provide efficient and flexible spaces
- To address safety and current ergonomics
- To provide a site and facilities that respond to environmental and energy needs
NORTH AUBURN MASTER LAND USE PLAN

- To provide upgrades to enable new facilities to fully comply with current state and federal laws and regulations related to animal welfare, environmental protection, food safety, occupational health, life safety, biohazard containment and security.

Economy Goals
- To address the needs of the farm without being over built
- To relocate all existing equipment that is still functional, and as is financially feasible
- To provide new equipment as required.

Time Goals
- To move into the new facilities in approximately 18 months (Spring 2008)

4.1.4 Waste Disposal
Waste disposal is a key consideration for the relocation of the Poultry Research Farm to North Auburn. The presence of the Fisheries Research Unit, which represents a half-century of development, requires special consideration with regard to protection of the watersheds and the water quality. Given that the Poultry Research Farm will produce a considerable amount of animal waste, the facility will need to be located such that it does not negatively impact on the watersheds.

Several alternatives for waste disposal system are listed in the Program study as follows:

1. Land Application System (LAS). This system requires adequate land area with no downstream site constraints. A feasibility analysis of the hydraulic and nutrient capacity of the land should be carried out to determine loading rates for seasonal operation.

2. If downstream constraints exist, such as the Fisheries Research Unit, a disposal alternative will be required. Possible alternatives include a discharge to surface waters, which would require a permit from the state regulatory agency, or discharge to the municipal sewer system. A discharge permit would require a waste load allocation from the state and the pretreatment facilities would have to meet state requirements.

3. Assuming availability discharge to the municipal sewer system will be dependent upon the agency pretreatment requirements and fee structure. Most municipal agencies have minimum pretreatment requirements for industrial (non domestic) system users and sometimes have surcharges for certain constituents in the waste stream. These requirements would have to be evaluated to determine the optimum pretreatment strategy.

(Sizemore p. 5.6)

Consideration should be given to investing $40K to $60K in a tumble-type composter to rapidly compost solid poultry waste into a horticultural, value-added product that could be bagged and sold. Also, it is possible to invest in a facility that could treat the solid waste with quicklime (CaO), similar to the wastewater treatment facility in Auburn. These methods should be compared to those already listed above for economic viability.
The site selection criterion of 34 acres plus required buffers only describes the area that is within the 4-6 percent slope criteria; this unit will need at least 75 acres for total buildout. The 75 acres represents the overland hay area as well as setbacks from future encroachment potential. In this section, the 75 acre figure indicates sufficient areas for the LAS or Land Application System.

4.1.5 Adjacencies/Compatibility Issues

Given that there is no unassigned land within the North Auburn property for the Poultry Research Farm, the facility will need to be located on land assigned to other colleges, schools and departments. To that end, the following will need to be considered relative to existing research activities.

Adjacency to the Fisheries Research Unit

The Poultry Research Farm and Fisheries can be compatible neighbors provided that the waste disposal method does not negatively impact the watersheds. Considerable emphasis will need to be placed on waste management. The College of Agriculture views the collocation of Fisheries and the Poultry Research Farm at North Auburn to be an opportunity to demonstrate best management practices.

Department of Animal Sciences

Adjacency to the Poultry Unit presents no major concerns for the Department of Animal Sciences.

Adjacency to College of Veterinary Medicine Facilities

The Poultry Research Farm would not necessarily be an incompatible neighbor for the College of Veterinary Medicine activities provided that there is no runoff from waste disposal. Positioning of the Poultry Research Farm should not divide CVM land in a way that would disrupt operations. CVM pastureland could be utilized for the land application of waste provided that a proper nutrient management program is established.

The Poultry Research Farm should consider other methods of waste disposal including composting, lime treatment, etc. Alternatives should be available in case the phosphorous levels reach the point that no additional land applications can occur.

Forestry

The Poultry Research Farm presents no major concerns for the research activities of the School of Forestry and Wildlife Sciences. Forestry land could be utilized for the land application of poultry waste.

4.2 Programmatic Requirements for the Acid Deposition Facility

The Acid Deposition facility will be relocated in the Fall of 2005. Site relocation criteria for the facility are as follows:

- 3.5 acres of land
• Proximity to utilities – power, water and sanitary sewer
• Relatively flat terrain to facilitate equipment movements

5.0 POULTRY RESEARCH FARM SITE SELECTION ANALYSIS

5.1 Poultry Research Farm Site Selection Methodology
The site selection methodology for the Poultry Research Farm included an analysis of several aspects of the North Auburn property as documented in a series of drawings provided herein. The drawings represent a sequential analysis of the land uses, the land character and development parameters considered in the site selection process.

Three categories of drawings are provided: 1) existing conditions analysis; 2) development parameter analysis; and 3) potential sites and layouts.

5.1.1 Existing Conditions Analysis

Existing Land Use – Figure 1
Existing land uses at the North Auburn property are documented in Figure 1. The purpose of the figure is to provide a record of land uses and facilities for future decision-making and for the immediate purpose of identifying a site for the Poultry Research Farm and Acid Deposition Facilities. The figure records existing land uses based on the discussions held with the schools, colleges and departments. Based on a review of existing land uses, currently there are no unassigned areas of the site immediately available for the Poultry Unit. Potential sites for the Poultry Unit, therefore, will need to be identified on land assigned to other schools, colleges and departments raising issues of compatibility and displacement of current research activities.

Elevation and Slope Analysis - Figures 2 and 3
An Elevation and Slope Analysis was carried out to identify areas with slopes similar to the existing facility (0 to 4 percent) as set out in the Program document for the Poultry Research Farm. The analysis reveals that the largest contiguous areas of slopes in the 0 to 4 percent range to be located immediately north and south of US Highway 280.

Forest Cover – Figure 4
Forest Cover of the entire North Auburn unit is illustrated in Figure 4. Most of the forested land lies within areas unsuitable for pastureland, and thus, is located in terrain often unsuitable for construction.

Hydrology and Drainage – Figure 5
The protection of the watersheds and water quality for the Fisheries Research Unit was a key objective in the site selection process. Figure 5 illustrates the location of all research ponds, which are numbered per the system established by the Research Unit. It also illustrates the pipe connections that have been installed to direct water from pond to pond. Figure 5 illustrates the importance of protecting all land south of Lee County Road 90 and west of Lee County Road 46 from possible water contamination.
Water and Sewer – Figures 6 and 7
At present, water services are limited to the periphery of the North Auburn property with the exception of the line running east to west along Farmville Road (Lee County Road 72). Sewer services are limited to the extreme southwestern corner of the site. No immediate plans are in place to extend sewer services further to the north.

5.1.2 Development Parameter Analysis
In order to ensure that the placement of the Poultry Research Farm does not negatively impact adjacent development and the watersheds of the site, separation buffers were created along the property boundary and wet areas. A description of each buffer area follows:

Development Buffer – Figures 8 and 9
It is assumed that the North Auburn property will eventually be surrounded by suburban residential development given current practices of leap zoning and recently approved subdivisions. In order to limit the possibility of future conflicts with surrounding landowners, a 1,500-foot buffer has been set out along the property boundary of the North Auburn landholdings to isolate Poultry Research Farm activities from adjacent neighbors. The 1,500-foot setback is based on guidance utilized to separate farming and residential activities. The guidelines are conservative and suggest that 1,500 feet is the minimum setback for poultry facilities from town limits to eliminate the smell and odor of the houses within the town (Goan, 2003). Figure 9 illustrates all land within the core or the North Auburn property that is not within 1,500 feet of existing or assumed future residential development. This analysis begins to suggest potential sites for the Poultry Research Farm in the area north and south of Lee County Road 90 and north of US Highway 280.

Wet Area Buffers – Figures 10 and 11
In order to ensure that water quality is protected on a site wide basis, wet area buffers were delineated across the North Auburn property. The buffers include 500 feet around ponds and 150 feet around streams. Stream buffers vary in ordinances throughout the United States and range 20 to 200 feet (Heraty, 1993). Given the importance of water quality at North Auburn, the buffers proposed are 500 feet around ponds and 150 feet around streams. The land outside the wet area buffers is documented in Figure 11. Again, this analysis suggests that land north and south of Lee County Road 90, and land north of US Highway 280 may be a suitable for the Poultry Research Farm.

Physiographically Appropriate Sites for the Poultry Research Farm – Figure 12
Figure 12 represents a composite of the existing conditions and development parameters considered in the site selection process. Based on the need to preserve the watersheds, accommodate existing teaching and research activities, and the physiographic conditions, two site areas were identified for the Poultry Research Farm. Site 1 includes land southeast of the intersection of Lee County Road 46 and US Highway 280; and Site 2 includes land north of US Highway 280.
Land in the area of Site 1 is currently assigned to the Beef Unit. The Beef Unit land is a low-lying area planted in hardwoods in the 1980s by Forestry and thus, is not utilized for Animal Science research. The portion located on CVM land (approximately 25 acres) has been utilized in the past for hay production; however, it has been removed from pasture because it does not support good hay production.

Site 2 is located on land assigned to the Department of Animal Sciences and Forestry. In work sessions conducted during the planning process, it was concluded that Site 2 is not an appropriate site for the Poultry Research Farm for the following reasons:

- It is highly visible from surrounding roadways and development
- It is further away from the central campus
- The shallow depth of bedrock of site prohibits the use of a lagoon system for waste management.
- Potential contamination of the adjacent creek.

Site 1, as shown in Figure 12, is considered to be the most appropriate site for the following reasons:

- It has slopes in the 0-4 percent range
- It is located on land currently in hay pasture and hardwoods but not within the beef unit.
- The land has proven to be difficult to manage in hay production and is no longer used for that purpose.
- It can be shielded from views by existing and supplemented tree cover along US 280 (hardwood / wet areas shown on Figure 12)
- Water services can be provided from lines along US 280
- It is accessible from US 280 and Lee County Road 46
- There is adequate land area
- Drainage of the site is to the northwest (Note: it is possible that runoff could contaminate Fishery ponds west of Lee County 46; preventative measures will need to be put in place).

Potential Site for the Poultry Research Farm – Figure 13

Figure 13 illustrates how the 34-acre Poultry Research Farm could be arranged on the site. The layout is based on the diagrammatic site plan provided by the Sizemore Group. It is provided to illustrate how the ideal conceptual layout for the Poultry Research Farm would fit on the land. It also illustrates how supplemental tree planting could further shield the facility from view. A detailed site and impact analysis should be carried out to determine the optimal layout relative to the landform, hydrology, soil conditions (including analysis for pesticides, nutrient loading, heavy metals, etc.) and adjacent activities. A comprehensive soil analysis must be conducted for pre-existing soil conditions/contaminants; percolation suitable for lagoon construction and overland spreading of waste material; and the proper amount of setbacks or buffer limits. Soil conditions must be confirmed by an engineering firm.
Although the proposed site meets many of the criteria set out for site selection, it should be noted that waste disposal remains a key issue. The waste disposal method must be carefully studied and evaluated relative to the water quality concerns of the Fisheries Research Unit. The Alabama Department of Environmental Management (ADEM) will consider the location of waste handling facilities in the approvals process and will need to approve the proposed facilities before construction.

The Poultry Research Farm (as an AFO) will be required to operate under a Comprehensive Nutrient Management Plan (CNMP) in accordance with ADEM rules and best management practices and standards as set by the National Resources Conservation Service (NRCS). Part of this plan will entail land application of both solid and liquid wastes, which could feasibly occur in the forested areas or in the hay pastures. By regulation, the Poultry Research Farm will be responsible for the proper operation and management of the Nutrient Management Plan.

The appropriate amount of acreage of proximal hay pasture and forest land will need to be assigned to the Poultry Research Farm for its CNMP. Prior to full adoption of the proposed site for the Research Farm, the CNMP must be developed and the appropriate acreage identified.

In addition to separation from surrounding external land uses, internal buffers will need to be considered to ensure that future offices, labs or other “human occupied” buildings are not negatively impacted by the Poultry Research Farm activities. The Alabama Department of Environmental Management regulations [ADEM Filed Operations Division – Water Quality Program Chapter 335-6-7 (modified 12/12/-00) provide guidance on appropriate set backs from Animal Feed Operations (AFO; i.e., the Poultry Unit) from human occupied buildings is the appropriate resource to guide future planning.

Based on the Sizemore planning document (p 1.7) the maximum capacity of the planned Poultry Research Farm facilities will be 32,404 chickens, which, according to ADEM is equivalent to 259 Animal Units. By ADEM rules, the new farm will be deemed a liquid waster facility (p7-39, 40) and on the basis of this designation with 259 Animal Units, must be 500 feet from the property line of the farm and no less than 1,320 from the nearest occupied building. Accordingly, property boundaries will need to be identified for the Poultry Research Farm in order to provide the required 500 foot set back for the animal waste facilities (poultry houses, lagoons, dry stack shed, etc). A “planning” perimeter will need to be established to ensure that future occupied buildings are not within 1,320 feet of the waste facilities.

These internal setbacks are of particular importance given that the consolidation of infrastructure that will be result from the construction of the Poultry Research Farm. Future uses that would benefit from this investment will need to be located outside the boundaries set out by ADEM.

According to the Program Study, the most likely method of wastewater disposal will be a lagoon system with land application of dry compost. An advantage of the lagoon system is that inflow can be sporadic. Bioreaction requires continuous inflow, which is unlikely to occur at this facility.
The uncertainty of sewer service to the North Auburn property further supports the use of the lagoon system.

A comprehensive nutrient management plan will need to be developed so that watershed contamination can be avoided. The program document recommends that an economic evaluation based upon the influent characteristics, flow quantities and frequency be performed.

In conclusion, a more detailed analysis of the proposed site is necessary to ascertain the best functional layout for the Poultry Research Farm; to determine the most appropriate waste management strategy; to protect the watersheds; and to be compatible with adjacent research activities.

Adjacent users such as the College of Veterinary Medicine should be involved in the continued site evaluation process for the following reasons:

- To ascertain appropriate distribution areas for excess solids and liquids produced by the Poultry Research Farm
- Delineation of the boundaries of the Poultry Research Farm to ensure that they do not impact on adjacent users such as the Beef Unit.
- Potential sharing and utilization of the proposed infrastructure
- Identification of land for CVM isolation facilities that will be displaced by the Poultry Research Farm

If a lagoon system is selected for wastewater disposal, it should include underground piping sized to accommodate irrigation of hayfields. A secondary lagoon usually has lower levels of nutrients compared to a primary lagoon although all cells of a planned lagoon system should be designed for easy pumping onto crop (hay) production fields. Any lagoon system will have to maintain a certain freeboard level above which it will require pumping out. Figure 13 should include a piping diagram to show that this aspect has been incorporated.

5.2 Proposed Site for the Acid Deposition Research Facility

Prior to commencing this study, the School of Forestry and Wildlife Sciences had selected a site for the Acid Deposition Research Facility. The site is located in the southwest corner of the North Auburn property near Lee County Road 72. The site offers the topography and access characteristics set out by the School and is within reasonable proximity of existing water lines. The facility is due to be relocated in the fall of 2005.

6.0 FUTURE CONSIDERATIONS FOR THE NORTH AUBURN PROPERTY

6.1 North Auburn Management Structure and Issues

Currently, a Task Force of the Alabama Agricultural Experiment Station manages land at North Auburn. The Task Forces includes the Deans of Forestry and Wildlife Sciences, the College of Human Science, the College of Science and Mathematics and the College of Veterinary Medicine, all of whom serve as Associate Directors. The Task Force Director is the Dean of Agriculture. The Colleges utilizing the North Auburn property are responsible for the day-to-day management of their respective areas.
The decision-making process of future facility development and land use changes should include the Office of Campus Planning and Space Management. Management and siting of future facilities in the North Auburn property should undergo the same campus planning approval as the rest of the Auburn University campus. The North Auburn property and its encompassing watershed are an Auburn University resource.

Key issues to be addressed are as follows:

- Land use protocols – what are appropriate uses of the land
- Data and records management of uses and research activities
- Criteria for locating and approving research activities (currently there are no formal criteria in place. This should include funding source information and the duration of the research and returning the land.
- Security issues, especially for transgenic research, botulism, vaccine work, etc.
- Protocols for handling animals and disposing of waste (Auburn has committees that monitor these activities including the Auburn University Biological Safety Committee; the Auburn University Animal Welfare Committee and AAALAC.
- Bio-safety protocols
- Animal care and use

6.2 Future Land Acquisition Strategy – Figure 14

While it would be in the interest of the North Auburn site to purchase adjacent properties to protect the watersheds and future land uses, this is likely to be prohibitively expensive given development pressures in the surrounding context. Figure 14 illustrates lands that the University should aim to acquire if at all possible to protect the fisheries watersheds and to ensure that future land uses do not present conflicts with activities on the North Auburn site.

At a minimum it is suggested that the University acquire road frontage property to minimize liability and trespassing issues.
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Vest, Larry R. and Dan L. Cunningham, Department of Poultry Science, The University of Georgia College of Agriculture and Environmental Sciences: Guide for Preparing Zoning Ordinances Relative to the Poultry Industry in Georgia. http://pubs.caes.uga.edu/caespubs/pubcd/c842-w.html. Date Accessed 5/19/05

APPENDIX
Meeting notes, October 6, 2004
Conference Call Notes, March 23, 2005 and March 30, 2005
Figure 1

North Auburn
Existing Uses

North Auburn
AUBURN UNIVERSITY
Auburn, Alabama
December 2005

Legend
- Black: Boundary Line
- Red: Road Network
- Blue: Tract Boundaries
- Gray: Subdivisions

Light Blue: Forest
Orange: Wasteland/Undeveloped
Purple: Agricultural
Green: Wetlands
Orange: Reservoirs

Legend Key:
- Forest: 48%
- Wasteland/Undeveloped: 38%
- Agricultural: 9%
- Reservoirs: 4%

Total: 3,310 Acres
Figure 3
Slope Analysis
Figure 4
Forest Cover

North Auburn
AUBURN UNIVERSITY
Auburn, Alabama
December 2005
Figure 12
Physiographically Suitable Sites for Poultry Unit & Acid Deposition Facility